DISSOCIATION OF SENSATION OF THE SYRINGOMYELIC TYPE: OCCURRING IN POTT'S DISEASE.

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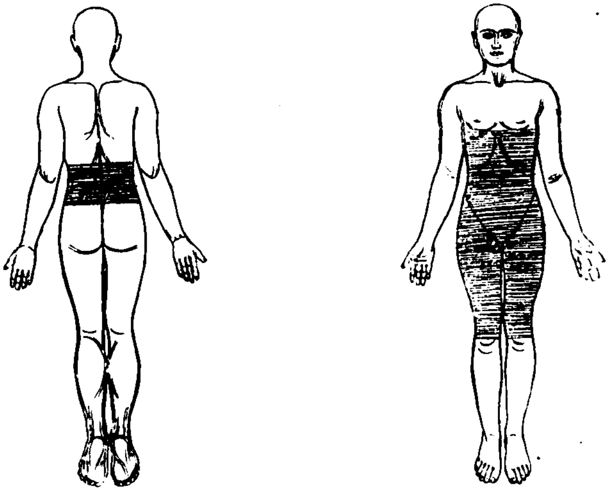
I present this report solely because of the peculiar character and distribution of the sensory changes.

The observations which I record were made upon a boy, 14 years of age, whose family history has no relation with the origin of his disease, there being no tuberculosis in the family. The boy's personal history is, excepting an attack of mumps in early childhood, entirely free from disease up to last February, when, while carrying a heavy basket, he felt sudden, sharp pain in the right shoulder and around both sides of the chest, which continued. The diagnosis of pleurisy and also of spinal injury had been made, but the pain was undoubtedly due solely to the spinal caries, as he had no other subjective symptoms of pleurisy, and has now no physical signs of such disease remaining. His pain gradually ceased after resting, and disappeared after six weeks or two months. It has only returned as twinges about either side of the chest, and no pain has been felt for several months. In the early summer he rode a bicycle excessively, but discontinued this in August, as he felt weak in his legs. This weakness was succeeded by stiffness, which increased rapidly, until he walked only with the aid of two canes and partly supported by a companion, moving the right leg with some freedom, but with an extremely spastic gait, while the left leg was very spastic and almost powerless. He was emaciated and emotional. When sitting or lying he could raise the right leg a little and had some power of extension and flexion at the joints. The left leg was almost entirely helpless. The right patellar reflex was violent. On the left it was much excited, but less excessive than on the right. The abdominal, cremasteric and plantar reflexes were absent. Ankle-clonus was present on both sides, and was very forcible. There was no evident atrophy of the muscles. The skin was dry, rough and ill-nourished below the knees. He had then no difficulty with bladder or rectum.

Examination of his spine showed quite pronounced posterior projection of the spines of the second, third and fourth lumbar processes, with some tenderness on pressure upon them.

The sensory condition was the most interesting feature. Tactile sense was entirely preserved everywhere, while pain sense, though still present upon energetic stimulation, was much lessened in a peculiar area, and it required quite severe procedures to cause him pain in this region. Anteriorly, the analgesia began on a horizontal line, which was on a level, in the centre of the body, with the fifth intercostal space, and extended from here down to the level of the knee joint, including all the skin space between these points. Posteriorly, the upper level was at a lower point by about two inches, and extended only one-third the way down the buttocks. Below this the posterior skin surface showed no loss of sensation of any form. The same area that exhibited a lessened pain sense showed an absolute loss of discriminative temperature sense, even to objects which were very hot or almost ice-cold. Whatever the temperature, he inclined to call things "a little warm," though this feeling of slight warmth was not constantly produced.

This examination was confirmed on several occasions by Dr. Willard, who took charge of him in the University Hospital. Just before his admission he had developed some incontinence of urine and of feces. By October 7th, after he had been entirely at rest, with head extension, for two months, he had regained control of his sphincters, and still retains normal control. Muscular power in his legs seemed rather better, especially in the right leg. The knee-jerks were not noticeably changed, and ankle-clonus was still energetic on either side. Reactions of degeneration were not present. The muscles responded to the faradic current. His sensation was nearly normal, though over the areas that have been described pain sense still seemed lessened, and he had a good deal of hesitancy in discriminating between hot and cold, and often gave improper answers when the difference in temperature was very marked, and was readily appreciated on any other skin surface than the one indicated.



The Area of Sensory Disturbances.

This improvement did not continue, however, and two weeks later his motor symptoms had increased, and the old dissociation of sensation had returned. By November 15th he was entirely paraplegic; the original condition of the knee-jerks and ankle-clonus persisted, but the hypalgesia and thermoanesthesia had extended down over the legs and feet and, below the upper limit of the sensory disturbance, the only portion of the surface that showed no change was a posterior area on each side, extending from the upper third of the buttocks down nearly to the knees. At the present time this surface is partly anesthetic to pain and does not discriminate between various temperatures, and he remains entirely paraplegic, though in much improved general health.

The appearance of this form of dissociation of sensation, or the existence of thermo-anesthesia alone in Pott's disease, is of some interest, as very little attention seems to have been given to it. Almost all of the studies of sensory changes in Pott's disease have been confined to the determination of disturbance of the tactile or pain senses. Kocher included several cases of this affection in his studies on spinal anesthesia, and Chipault carefully recorded the areas of anesthesia in 22 cases of spondylitis, but they did not investigate the condition of the thermal sense. Several of the text books on nervous diseases make no allusion to the occurrence of dissociation of sensation in Pott's disease, other than to mention that it may be found in compression myelitis from various causes. Gowers and Strümpell say that all the forms of sensation may be destroyed together, or, more frequently, tactile or pain sense alone. Schlesinger states that he has frequently met with thermo-anesthesia in spinal caries, and refers to Gowers and Bruns as making the same assertion. The individual case which Schlesinger casually mentions and one recorded by Daxenberger are the only cases found by me in detail. In the latter there was loss of pain and temperature sense in the right hand. In this case in the left leg there was at first loss of all sensation; later the temperature sense alone was absent. This difficulty in finding records like my own seems, however, due purely to the lack of investigation into the thermal sense. Isolated disturbance of this sense, or its loss with loss of pain sense, occurs in myelitis as in Biernacki's cases, in spinal tumor, in tabes, in disseminated sclerosis and in lesions of the nerve roots and of the peripheral nerves, besides being more frequently met with in syringomyelia and hysteria. So that we cannot be surprised at its occurrence in a disease where organic changes are so common as in Pott's disease. It is, however, rather curious that so little attention has been given to it by authors.

More difficult to understand than the occurrence of this dissociation of sensation is its distribution in this case. It does not correspond to spinal segments, nor is it a typical example of the peculiar regional form so commonly found in syringomyelia, and which has been the recent subject of discussion by Chipault and Knapp, since it did not encircle the leg below, but was more extensive over the front than posteriorly. Beyond the fact that it does not correspond to the usual limitations in lesions of spinal segments, as Thorburn, Starr, Kocher and others have determined these limits, it would seem that compression must have acted with a peculiar nicety to have so pressed upon the posterior nerve roots throughout this extent, and in each case have destroyed only pain and temperature sense. So that we are practically forced to accept some change in the cord itself as the cause of this. It accords fairly well with Chipault's division of a combined nerve root and medullary lesion, in which division he adopts the hypothesis of Brissaud that a certain circular level of the cord supplies a corresponding circular area of the limbs or body. This is, of course, purely hypothesis, but is made somewhat more forcible by his discovery in five of the 22 cases he examined that when the caries was not situated over the cord, but over the cauda, he got only the root type. When the caries was situated over the cord itself the medullary type was found alone or combined with the root type, or in certain cases neither type occurred. The root type occurred alone with such situation of the lesion in but two cases, and these two cases showed fair evidence of involvement of the roots alone without damaging the cord. I have examined quite a large number of records of distribution of anesthesia, and, while that variety which Chipault and Brissaud term the root type may occur alone when the disease is seemingly limited to the cord, I have not, on the other hand, seen any records which showed the medullary type either alone or combined in which there was probably no lesion of the cord. This is not positive evidence, but points to the cord as the probable situation of at least a portion of the disease.

If the cord be diseased in this case—beyond the probable implication of the roots—it is an interesting question whether we have here simply a compression myelitis, an extension of the tuberculous disease into the cord, or a central conglomerate tubercle of the cord.

This is a question which cannot be finally answered in life. Compression myelitis alone might, of course, involve areas of the cord, the disease of which would give rise to the symptoms, as could extension of tubercular disease into the cord. A good explanation of the progress of the sensory disturbance downward would seem to be the existence of some originally central lesion, which gave rise to the early peculiar distribution of hypalgesia and thermo-anesthesia, which lesion subsequently extended outward, so that the fibres conducting temperature and pain sensations from the portions below the area first affected have since been cut off, and a complete loss of these senses has resulted in the corresponding parts. This could be most easily accomplished by a central, isolated tubercle, as either simple compression myelitis or tubercular myelitis could do this only with difficulty and with peculiar progress. Very possibly, if such is the case, the motor symptoms may be largely caused by compression from the nerves and exudate.

Such cases of isolated conglomerate tubercle have been described by Chvostek, Gerhardt, Sachs, Herter, Schlesinger and others, and are well established as occasional, though rare, occurrences, and have been diagnosed during life.

Beyond the conditions mentioned, the only other possibility of much interest in diagnosis is that of the existence of hysteria with the spondylitis, and that the peculiar distribution of the sensory changes is explained by coincidence. As the fields of vision are of normal extent and the color fields are normal, and all other hysterical stigmata, except this peculiar symptom, are absent, I think the claim that the sensory changes are hysterical would be, as Knapp says of such cases, "begging the question."

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